

WHAT IS CLAIMED IS:

1. A process comprising contacting PO3G having color with
5 hydrogen in the presence of a hydrogenation catalyst, wherein the PO3G, after hydrogenation, has a APHA color of less than about 50 and a molecular weight of about 250-5,000.
2. The process of claim 1, wherein the PO3G, after
10 hydrogenation, has a APHA color of less than about 40.
3. The process of claim 1, wherein the PO3G, after hydrogenation, has a APHA color of less than about 30.
4. The process of claim 1, wherein the PO3G, after
15 hydrogenation, has a APHA color of less than about 20.
5. The process of claim 1, wherein the catalyst comprises an element of Group VIII of the Periodic Table or a metal oxide.
20
6. The process of claim 5, wherein the hydrogenation catalyst is supported on a support comprised of at least one of carbon, alumina, silica, silica-alumina, copper chromate, silica-titania, titania, titania-alumina, barium sulfate, calcium carbonate, strontium carbonate,
25 compounds thereof, and combinations thereof.
7. The process of claim 1, wherein the catalyst comprises at least one of RANEY nickel and RANEY cobalt catalysts which may or may not be modified with such elements as iron, molybdenum, chromium,
30 palladium, zinc or other modifying elements, or catalysts made as dispersions of these elements, or supported catalysts from the group consisting of palladium on carbon, palladium on calcium carbonate,

palladium on barium sulfate, palladium on alumina, palladium on titania, platinum on carbon, platinum on alumina, platinum on silica, iridium on silica, iridium on carbon, iridium on alumina, rhodium on carbon, rhodium on silica, rhodium on alumina, nickel on carbon, nickel on alumina, nickel
5 on silica, rhenium on carbon, rhenium on silica, rhenium on alumina, ruthenium on carbon, ruthenium on alumina, ruthenium on silica, mixed copper oxide, zinc oxides, and chromium oxides.

8. The process of claim 1, wherein the contacting is conducted
10 at a temperature of about 25° - 250°C.

9. The process of claim 8, wherein the contacting is conducted at a temperature of about 120° - 200°C.

10. The process of claim 9, wherein the contacting is conducted
15 at a temperature of about 140° - 180°C.

11. The process of claim 8, wherein the LHSV is at greater than about 0.01 h⁻¹.
20

12. The process of claim 11, wherein the LHSV is greater than about 1.0 h⁻¹.

13. The process of claim 12, wherein the LHSV is greater than
25 about 10 h⁻¹.

14. The process of claim 11, wherein the contacting is conducted at a pressure of about ambient to about 1000 psig (7000 kPa).

15. The process of claim 14, wherein the contacting is conducted
30 at a pressure of about 200 to about 600 psig (1480 - 4240 kPa).

16. The process of claim 15, wherein the contacting is conducted at a pressure of about 300 – 500 psig.

17. The process of claim 14, wherein the amount of hydrogen
5 contacted with the PO3G is from about 0.05 to about 100 standard cm³ per gram of PO3G.

18. The process of claim 17, wherein the amount of hydrogen is from about 0.5 to about 2 standard cm³ per gram of PO3G.
10

19. The process of claim 17, wherein the amount of hydrogen is from about 0.5 to about 1 standard cm³ per gram of PO3G.

20. The process of claim 1, wherein the PO3G has a APHA
15 color, before the contacting, of at least 50 APHA.

21. The process of claim 20, wherein the APHA color, before the contacting is about 70-300.

22. The process of claim 21, wherein the APHA color, before the
20 contacting, is about 85-250.

23. The process of claim 22, wherein the APHA color, before the contacting, is about 100-200.
25

24. The process of claim 1, wherein the APHA color is reduced by at least about 50%.

25. The process of claim 1, wherein the APHA color is reduced
30 by at least about 60%.

26. The process of claim 1, wherein the APHA color is reduced by at least about 70%.

27. The process of claim 1, wherein the PO3G, after
5 hydrogenation, has a molecular weight of about 500-4000.

28. The process of claim 27, wherein the molecular weight is about 1000-3000.

10 29. The process of claim 1, wherein the PO3G, after hydrogenation, has a UV absorption at 270 nm of less than about 1.0.

30. The process of claim 1, wherein the PO3G, after hydrogenation, has a UV absorption at 270 nm of less than about 0.3.

15 31. The process of claim 1, wherein the PO3G, after hydrogenation, has a UV absorption at 270 nm of less than about 0.15.

32. A process comprising:
20 (a) contacting 1,3 propanediol reactant having color with hydrogen in the presence of a hydrogenation catalyst,
(b) contacting the hydrogenated 1,3-propanediol with polycondensation catalyst;
(c) polycondensing the 1,3-propanediol reactant to PO3G
25 having color; and
(d) contacting the PO3G with hydrogen in the presence of a hydrogenation catalyst.

33. The process of claim 32, wherein the PO3G, after
30 hydrogenation, has a APHA color of less than about 50.

34. The process of claim 33, wherein the color of the 1,3-propanediol, after hydrogenation, is less than about 10 APHA..

35. A composition comprising: (i) PO3G having color and (ii)
5 hydrogenation catalyst, wherein the PO3G has a APHA color of less than about 50.

36. The composition of claim 35, wherein the PO3G has a APHA color of less than about 40.

10

37. The composition of claim 35, wherein the PO3G has a APHA color of less than about 30.

38. The composition of claim 35, wherein the PO3G has a APHA
15 color of less than about 20.

39. The composition of claim 35, wherein the catalyst comprises an element of Group VIII of the Periodic Table or a metal oxide.

20 40. The composition of claim 39, wherein the catalyst is at least one of carbon, alumina, silica, silica-alumina, silica-titania, titania, titania-alumina, barium sulfate, calcium carbonate, strontium carbonate, compounds thereof, and combinations thereof.

25 41. The composition of claim 40, wherein the catalyst comprises at least one of comprises at least one of RANEY nickel and RANEY cobalt catalysts which may or may not be modified with such elements as iron, molybdenum, chromium, palladium, zinc or other modifying elements, or catalysts made as dispersions of these elements, or supported catalysts
30 from the group consisting of palladium on carbon, palladium on calcium carbonate, palladium on barium sulfate, palladium on alumina, palladium on titania, platinum on carbon, platinum on alumina, platinum on silica,

from the group consisting of palladium on carbon, palladium on calcium carbonate, palladium on barium sulfate, palladium on alumina, palladium on titania, platinum on carbon, platinum on alumina, platinum on silica, iridium on silica, iridium on carbon, iridium on alumina, rhodium on carbon, 5 rhodium on silica, rhodium on alumina, nickel on carbon, nickel on alumina, nickel on silica, rhenium on carbon, rhenium on silica, rhenium on alumina, ruthenium on carbon, ruthenium on alumina, ruthenium on silica, mixed copper oxide, zinc oxides, and chromium oxides.

10 42. The composition of claim 35, containing about 2-20 % catalyst.